

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE: CSSTP-0007-00(694) Coweta
P.I. No.: 0007694
S.R. 34 SE Bypass

OFFICE: Engineering Services

DATE: June 9, 2008

FROM: Brian K. Summers, PE, Project Review Engineer *REW*

TO: Thomas Howell, P.E., District Engineer, Thomaston

SUBJECT: IMPLEMENTATION OF VALUE ENGINEERING STUDY ALTERNATIVES

Recommendations for implementation of Value Engineering Study Alternatives are indicated in the table below. Incorporate the VE alternatives recommended for implementation to the extent reasonable in the design of the project.

ALT #	Description	Potential Savings/LCC	Implement	Comments
1	Use 11-ft. lanes throughout	\$496,554	No	Since the time the VE Study was done, several significant developments have occurred within the area that will have an impact on the future traffic volumes within this corridor. The Poplar Road/I-85 IJR has been approved. Also, Piedmont Healthcare has formally announced their plans for a new hospital complex expected to generate almost 19,000 vpd once completed before the Design Year for this project. Preliminary analysis suggests the proposed truck traffic could be between 10 to 15%.

ALT #	Description	Potential Savings/LCC	Implement	Comments
2	Use 12-ft. outside lanes for trucks and 11-ft. inside lanes for other vehicles	\$248,277	No	Same as for VE Alternative No. 1.
3	Use a two-lane section throughout	\$2,237,761	No	Same as for VE Alternative No. 1. A more detailed traffic analysis should be conducted to verify the future volumes. This should take into account the Poplar Road Project as well as Piedmont Healthcare development.
4	Use a three-lane section throughout	\$1,141,125	No	Same as for VE Alternative No. 1. A more detailed traffic analysis should be conducted to verify the future volumes. This should take into account the Poplar Road Project as well as Piedmont Healthcare development.
5	Use mechanically stabilized embankment walls in lieu of end spans at the railroad bridge	\$506,382	Yes	This should be done.
7	Lower the profile to reduce the amount of required embankment	\$1,401,587	Yes	This should be done.
11	Use box culverts in lieu of bridges at the stream crossings at Stations 150+00 and 160+00	\$5,188,218	Yes	This should be done.

ALT #	Description	Potential Savings/LCC	Implement	Comments
16	Minimize the right-of-way width to minimum	\$453,096	Yes	This should be done.
19	Use 24-in. in lieu of 30-in. curb and gutter	\$83,369	Yes	This should be done.
20	Use a 20-ft. grassed flush median without a barrier	\$242,007	No	This does not take into account additional drainage structures that would need to be installed especially in superelevated sections.
25	Use a 6.5-ft. flush median with a concrete barrier	\$841,889	No	This would introduce an obstacle in the median at all median openings. Also, this median barrier wall would need to be protected which was not included in the cost estimate.
26	Eliminate the median	\$3,107,750	No	Would not separate opposing traffic and would cause operational/safety issues at all the intersections.
30	Use a two-lane section with a 20-ft. median and curb and gutter throughout	\$1,889,545	No	Same as for VE Alternative No. 1. A more detailed traffic analysis should be conducted to verify the future volumes. This should take into account the Poplar Road Project as well as Piedmont Healthcare development.
31	Eliminate the taper on the bridge over the railroad by reducing the length of the left-turn lane	\$363,339	Yes	This should be done.
33	Use 2:1 fill slopes vs. 4:1 slopes	\$1,186,549	Yes	This should be done.

ALT #	Description	Potential Savings/LCC	Implement	Comments
34	Use 1:1 fill slopes with guardrails in lieu of 4:1 slopes between Stations 147+00 and 189+00	\$121,680	No	Geogrid fabric, which is normally required in this situation, was not included in the VE Alternative. In addition, there would be ongoing future maintenance costs.
35	Use 4-ft.-wide paved sections of the 10-ft.-wide shoulders in lieu of the 6.5-ft. paved sections	\$125,238	Yes/partial	The 4-ft. wide paved shoulders will be used; however, the shoulder width will remain at 10-ft.

A meeting was held on May 30, 2008 and Wayne Kennedy with Coweta County, Tom Karis and Chris Edmonson with Clough Harbour and Associates, LLP, Bill Rountree, Jason Mobley and Jeff Swiderski with District 3 Design and Brian Summers, Ron Wishon and Lisa Myers of Engineering Services were in attendance.

Additional information was provided by the Design Consultant on 6/2/08 and 6/6/08.

The results above reflect the consensus of those in attendance and those who provided input.

Approved:  Date: 6/12/08
Gerald M. Ross, P. E., Chief Engineer

BKS/REW

Attachments

c: Gus Shanine
R. Wayne Fedora
Todd Long
Thomas Howell
David Millen
Bill Rountree
Jason Mobley

CSSTP-0007-00(694) Coweta

P.I. No. 0007694

Implementation of Value Engineering Study Alternatives

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Jeff Swiderski
Paul Liles
Bill Ingalsbe
Bill DuVall
Doug Franks
James Magnus
Lamar Pruitt
Ken Crabtree
Havard Seldon
Katherine Russett
Ken Werho
Nabil M. Raad
Lisa Myers

Wishon, Ron

From: Myers, Lisa
Sent: Tuesday, June 03, 2008 6:38 AM
To: Wishon, Ron
Subject: FW: Newnan Bypass VE Implementation

Please respond to Chris.

Lisa Myers ☺

Design Review Engineer Manager/ VE Coordinator

*GA DOT - Engineering Services
#2 Capitol Square Room 266
Atlanta, GA 30334*

404-651-7468

lmyers@dot.ga.gov

From: Edmondson, Chris [mailto:CEdmondson@cha-llp.com]
Sent: Monday, June 02, 2008 2:40 PM
To: Myers, Lisa
Cc: Karis, Tom
Subject: Newnan Bypass VE Implementation

Lisa,

In regards to alternate 33: "Use 2:1 slopes vs. 4:1 slopes". There appears to have been some confusion in regards to this alternate. Our response was predicated on the idea that the VE Team wanted to utilize 2:1 slopes throughout the length of the project and only use guardrail when fill heights exceeded 10'. When I compared our earthwork calculations I noticed that the numbers were too close to one another. At that point we determined that the intention of the recommendation was to *only* use 2:1 slopes when the fill height exceeds 10'. This was exactly what we recommended in our responses. So it appears to be a wash. Please revise the Implementation Report to say yes to alternate 33.

I am anticipating that Wayne Kennedy will have the letter from the ARC regarding bike routes.

Thank you,

We Have Moved!

Chris Edmondson, PE
Project Manager
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Wishon, Ron

From: Edmondson, Chris [CEdmondson@cha-llp.com]
Sent: Friday, June 06, 2008 9:52 AM
To: Myers, Lisa; Wishon, Ron
Cc: Karis, Tom; Kennedy, Wayne
Subject: FW: Bicycle Lanes on Newnan Southeast Bypass Project

To all,

The VE Team recommended alternate #35 was to use a 4' paved shoulder and a 3 ½' grass shoulder thereby reducing the overall shoulder width from the proposed 10' to 7 ½'. At the VE Study Implementation meeting it was agreed upon that we would prefer to keep the overall shoulder width at 10' with 4' of that being paved. It was also agreed that confirmation was needed to ensure that the Newnan Bypass does not require any type of bike facilities. Mr. Wayne Kennedy of Coweta County Development and Transportation stated that he would provide verification from the Atlanta Regional Committee that bike facilities would not be required.

Please read the below chain of emails in regards to the VE Team's recommendation alternate #35 on the Newnan Bypass. Mr. Kennedy refers to the below email from an ARC representative (Michael Kray). In short the ARC is not requiring bike shoulders on this project. We hope that the ARC's representative's response will be sufficient enough to secure the VE Team's recommendation of a 4' paved shoulder.

Please contact me if you have any questions.

Thank you,

We Have Moved!

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From: Kennedy, Wayne [mailto:wkennedy@coweta.ga.us]
Sent: Friday, June 06, 2008 8:01 AM
To: Edmondson, Chris
Subject: FW: Bicycle Lanes on Newnan Southeast Bypass Project

The Coweta County bike path program does not designate this proposed roadway in our bike path program. I do not have a letter stating that bike path are not required on this project but below is the response from the ARC on the issue. I hope this will work.

*Wayne Kennedy
Director of Development and Engineering
Coweta County
21 East Washington St.
Newnan, Ga. 30263
Office: 770-683-2300*

From: Edwards, Tavoires
Sent: Thursday, June 05, 2008 2:58 PM
To: Kennedy, Wayne
Subject: FW: Bicycle Lanes on Newnan Southeast Bypass Project

Wayne,

Please see the response below from Michael Kray (ARC). It doesn't look like ARC is requiring bike lanes, but they do encourage them to accommodate users. Is there a significant cost savings to the project in not providing that extra shoulder width? With fuel prices as they are and on the rise, more residents may end of cycling to destinations versus driving and the county should provide adequate bicycle facilities when possible (i.e. on road improvement projects).

Tavoires Edwards

Transportation Planner
Coweta County Planning Department
22 East Broad Street
Newnan, Georgia 30263
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tedwards@coweta.ga.us

From: Michael Kray [mailto:MKray@atlantaregional.com]
Sent: Thursday, June 05, 2008 2:41 PM
To: Edwards, Tavoires
Subject: RE: Bicycle Lanes on Newnan Southeast Bypass Project

Hello back to you Tavoires. At this time ARC does not have a board adopted complete streets policy so we would not *require* that bike lanes are provided as part of those projects. That being said, we encourage that all users are accommodated on all roadways. Keep in mind that bike facilities don't have to be bike lanes or trails. Our Bicycle and Pedestrian plan states that often times wide shoulders can be enough to accommodate most cyclists. If you can provide a minimum 3' bikeable shoulder (and you may want to consider more for routes such as these that will have high truck traffic) that should leave enough room. Just make sure the rumble strip placement doesn't prohibit bikes from using the shoulder. Finally, if you expect to follow the recommendations of your CTP then it will probably be more cost effective to leave the 6 ½ feet shoulders on SR 16 rather than going back and retrofitting the facility later.

From: Edwards, Tavoires [mailto:tedwards@coweta.ga.us]
Sent: Wednesday, June 04, 2008 5:37 PM
To: Michael Kray
Cc: Kennedy, Wayne
Subject: Bicycle Lanes on Newnan Southeast Bypass Project
Importance: High

Hello Michael:

Coweta County is in the process of performing a Value Engineering analysis for the Newnan Southeast Bypass Project (CW-007/PI# 0007694) and the associated SR 16 widening project (CW-034/PI# 0006877). The engineers are inquiring if bicycle lanes will be required on this project in order to assess whether the shoulder width will need to be 6/12 ft or 4ft (which could result in some cost savings). Neither the Coweta County Bicycle Plan nor the Coweta County Greenway Master Plan proposes bicycle facilities CW-007 or CW-034. The Coweta County CTP recommends that SR 16 from US 29/27Alt to Gordon Road be added to the county's Bicycle Route system in a future revision to provide increased connectivity between existing routes.

Since both of these projects are L230 funded projects, would ARC (or the Georgia DOT) require that bicycle lanes be provided as part of this project?

Tavoires Edwards

Transportation Planner

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tedwards@coweta.ga.us



CLOUGH HARBOUR & ASSOCIATES, LLP

May 15, 2008

Lisa Myers
Design Review Engineer Manager / VE Coordinator
Georgia Department of Transportation
No. 2 Capitol Square, Room 226
Atlanta, Georgia 30334

Re: VE Study Recommendation Response
SR34 SE Newnan Bypass from SR 16 to Turkey Creek Rd
CSSTP-0007-00(694), PIN: 0007694, Coweta County, GA
CHA Project No. 15795

This document has been prepared as a response to the VE Study recommendations for the referenced project. The VE Study was held from March 25th – 28th, 2008. The VE Study Report of findings and recommendations was issued on April 9, 2008. CHA has reviewed the report and offers the following responses to each recommendation:

A significant focus of the VE Study has been directed toward the capacity and operational aspects of the project, with a particular emphasis being placed on the number and width of lanes necessary to satisfy the project objectives. The VE Study has recommended a number of alternates involving reductions in the number of lanes and/or reductions in the width of lanes. In order to ensure that the conclusions which are drawn in this summary are the most cost-effective long term solutions, it is imperative that the presented responses be soundly founded, well understood and thoroughly documented based upon the most current and up to date information available at this time. The following is a synopsis of traffic-related studies that have been conducted as part of the project development to get to this point.

Between 2005 and 2006 Coweta County commissioned URS Corporation for the development and preparation of a comprehensive transportation plan to evaluate the anticipated future growth and subsequent transportation demands which would be facing the County through a 25 year planning horizon. The Coweta County Comprehensive Transportation Plan (CCCTP) was developed with information extracted and manipulated from the Atlanta Regional Commission's (ARC's) regional travel demand model. Within the CCCTP the base year was established to be 2005, and for the purposes of County-wide planning, the forecasting years were projected to 2010 and 2030. A basic premise of this methodology was that any modifications to the base year model were carried through the future year models. The CCCTP was presented to, and adopted by, Coweta County in 2006.

However, during 2005 and then concurrently with the CCCTP development, a separate traffic forecasting and modeling exercise was performed by URS Corporation specific to the Newnan Bypass Southeast Segment. The separate and more specific study was to be used as a basis for developing initial capacity (lane) and operational (intersection) requirements to be proposed as part of the Newnan Bypass Southeast Segment concept development process. As an outcome of those efforts a project specific report was prepared with proposed lane and intersection recommendations and the supporting analysis. That

document was completed in 2007 and is included in the Draft Concept Design Report and is identified as the Traffic Analysis Memorandum for the Newnan Bypass and SR16 Widening.

Included within the Traffic Analysis Memorandum were excerpts from the CCCTP. The initial analysis of the modified CCCTP model results (included in the Traffic Analysis Memorandum) for the base year indicated low traffic volumes in the study area of the proposed Newnan Bypass Southeast Segment. Intuitively, the traffic volumes on the proposed Bypass Southeast Segment were expected to be higher than modeled. In recognition of this anomaly, and to make the model more representative of the actual proposed condition which would be expected with the construction of the Bypass, the model was modified by URS Corp. through the addition of a new centroid connection point and a new Traffic Analysis Zone (TAZ) with direct access to the Bypass Southeast segment being incorporated. For traffic forecasting, the model used an annual growth rate of 1% for 2005-2010 and a 1% growth rate from 2010-2030. The resulting 2030 Average Annual Daily Traffic projected by the "adjusted" model for the Bypass Southeast segment was 10,394 vehicles per day.

Since the time of that analysis, two very significant developments have occurred within this area of Coweta County which would strongly indicate and support a need to re-visit the traffic analysis and modeling for the Newnan Bypass Southeast segment. First, the proposed interchange at the Poplar Road crossing of I-85 has advanced through the initial approval process at the state and federal levels. The I-85/Poplar Road Interchange Justification Report (IJR), which was under review by FHWA at the time of the study, has been recently approved with a recommendation supporting a new fully directional diamond-type interchange providing direct access between I-85 and Poplar Road. The Traffic Analysis Memorandum indicates that the effects of the proposed interchange were taken into account in the travel demand model modifications.

However, what was not known at the time of the study was the fact that Piedmont Healthcare was exploring the concept of constructing a regional medical and dental complex in Coweta County at a location along Poplar Road between the Newnan Bypass and I-85. It is our understanding that Piedmont Healthcare was awaiting a formal decision on the IJR before formally announcing their plans for the new hospital complex. Since the IJR has been formally approved by the FHWA, Piedmont Healthcare has moved forward with their plans for the development of a new regional medical complex, the Piedmont Newnan Hospital, at the proposed I-85/Poplar Road Interchange location.

The proposed Piedmont Newnan Hospital is of such scale that it required the preparation of a DRI (Development of Regional Impact) study and report as part of their project approval process. Within the DRI, the full buildout of the Piedmont Newnan Hospital is to be complete by 2020 and will consist of 800,000 square feet of hospital and 240,000 square feet of medical-dental facilities. As indicated in the DRI report, these facilities alone, when complete in 2020, will generate 18,856 vehicles per day. As an interim step, the 2010 Phase 1 medical complex buildout is projected to generate 10,036 vehicles per day.

Due to the close proximity of the proposed Piedmont Newnan Hospital to the Newnan Bypass, this new facility will have a significant impact on future traffic volumes on the Bypass. The facility itself is expected to generate almost twice as much traffic in 2020 as was previously projected along the proposed new section of the Bypass in the year 2030 (18,856 vehicles per day in 2020 versus 10,394 vehicles per day in 2030) without the influence of the hospital as presented in the Traffic Analysis Memorandum.

The new regional medical and dental complex will also have a significant impact on the surrounding land use and development (type and density). The development which is anticipated to be spurred by the new medical and dental complex will result in subsequent and significant growth in the traffic volumes in the area along Poplar Road and the Newnan Bypass. It is our opinion that the growth will be much more so than the annual one percent (1%) used in the travel demand model. This new supporting development

resulting from, or in support of, the hospital development will also generate a significant amount of traffic in the area, much of which could be in addition to the hospital generated traffic.

As part of our due diligence in the VE Study response resolution process, we have also conducted a cursory comparison of traffic volumes collected along US 29 between I-85 and SR 16. The information compiled and evaluated provides an indicator of traffic changes in close proximity to the Bypass Southeast segment. That cursory comparison indicated an 8% growth for the years 2005 through 2007. Based upon our experience and understanding of the study area and Coweta County, this 8% growth may be slightly higher than the overall average for the area, but we can conclude with a high degree of confidence that the project area will see traffic volumes grow at a rate significantly higher than the 1% used in the "adjusted" travel demand model. That 1% growth forecast has been the basis of the lane requirements and intersection configurations which are the subject of the lane and intersection geometry presented for consideration within the VE Study.

In conclusion, and as a precursor to the following responses specific to the VE Study recommendations, it is our opinion that the introduction of the new regional hospital (18,856 vehicles per day) and the resulting impact on land use development in the surrounding area, including the areas along the Newnan Bypass, will significantly impact future traffic volumes in the transportation network and along the proposed Bypass Southeast Segment. These impacts were not known and could not be determined at the time of the 2007 Traffic Analysis Memorandum (10,394 vehicles per day) which was the basis for the concept design development and subsequent travel lane recommendations. It is further our opinion that the 1% growth rate also appears to be low considering the recent and anticipated development activities within the project study area. In order to validate and/or refute, with the necessary degree of confidence required, the recommendations within the VE Study, it is our opinion that a more comprehensive sub-area traffic study needs to be conducted in light of the recent activities and development plans within the County. A well-defined sub-area traffic study will more accurately represent than anticipated development and traffic growth which in turn will allow the assessment and conclusive response to the VE Study recommendations.

Alternate No. 1

Recommendation: Use 11-ft. wide lanes and keep all other elements of the typical concept section the same. Reduce the right-of-way width by 2 ft. on each side of the roadway.

- Response: We do not concur with this recommendation.
- Justification: Pending the preparation of an updated and project specific sub-area traffic study to more accurately predict anticipated traffic volumes on the proposed Bypass Southeast segment we do not have an accurate assessment of the projected traffic volumes and vehicle composition expected on the proposed Bypass Southeast segment. However, more recent information from an ongoing and adjacent project (P.I. 0006293) at the intersection of SR16 and US29 in close proximity to the southern terminus of the Bypass suggests that truck traffic along the proposed Southeast segment could range between 10 and 15%. It is important to note in this response that Coweta County has seen a recent and significant increase in truck traffic within the study area and has signed a section of Turkey Creek Road between SR16 and the Newnan Bypass as a commercial vehicle route to divert truck traffic from US29 through the City of Newnan. Based upon a cursory review of the truck travel patterns using this signed route along Turkey Creek Road, it is easy to conclude that upon completion of the Southeast segment, a significant amount of those trucks using Turkey Creek Road will be re-directed to the Bypass. Recognizing the significant amount of truck traffic which will be routed along the Southeast segment of the Bypass it is our opinion that a reduction of the conventional 12 ft. travel lanes to 11 ft. is not prudent.

Alternate No. 2

Recommendation: Use 12-ft. wide outside lanes for trucks only and 11-ft. wide inside travel lanes. Keep all other elements of the typical concept section the same. Reduce the right-of-way width by one ft. on each side of the roadway.

- Response: We do not concur with this recommendation.
- Justification: Same justification as presented for Alternate No.1. In addition, because of the likelihood that the land uses along the Bypass will change and commercial development with access to and from the Bypass may occur, the necessity for left turning and right turning vehicles exiting and entering the traffic stream will make the maintenance of all truck traffic in the outside lanes difficult to achieve. It is our opinion that a reduction of the inside travel lanes from 12 ft. to 11 ft. is not prudent.

Alternate No. 3

Recommendation: Construct only the 12-ft. wide travel lanes throughout the project. Purchase the originally intended right-of-way width to allow for future expansion when warranted. Since it could be difficult to expand the bridges in the future, construct all four lanes on the bridge. The total length of all three bridges is 950 lf.

- Response: We do not concur with the recommendation.
- Justification: Same justification as presented for Alternate No. 1. In addition, since the time of this recommendation, an ecological assessment of the waterbodies and stream course has been conducted. The initial results of the study indicate that there are no threatened or endangered fish or mollusk species within any of the streams which were presented to the VE Team as proposed bridge crossings. At this time we believe that the bridges proposed for the stream crossings may be replaced with concrete box culverts (see Alternate No. 11) pending further and more definitive investigations for environmental compliance and compatibility. It is our opinion that the construction of the (two, implied) 12-ft. travel lanes is not prudent.

Alternate No. 4

Recommendation: Construct two 12-ft. wide travel lanes with a 14-ft. wide center turning lane throughout the project. Purchase the originally intended right-of-way width to allow for future expansion when warranted. Since it could be difficult to widen the bridges in the future, construct all four lanes on the bridge. The total length of all three bridges is 950 lf.

- Response: We do not concur with this recommendation.
- Justification: Same justification as presented for Alternate No. 1. Additionally, a 20 foot raised median is the preferred median type for the Bypass. Published studies have shown higher instances of vehicular and pedestrian accidents occur on two-way median left turn lane roads when compared to roads with defined medians and turn lanes/auxiliary lanes. Reasons for these increases include: left and u-turn movements that occur in random an often unsafe locations; head-on collisions from opposing traffic; and pedestrian crossing the roadway without controlled access. A 1998 Georgia Department of Transportation study of crash statistics for highways with either a raised median or a flush median concluded that a raised median section had 78 percent fewer pedestrian fatalities per 100 miles of roadway compared to the flush median roadway.

It is also a goal of Coweta County to control the access to and from the Bypass as development occurs after construction of the road. The construction of a flush, two-way median left turn lane is contradictory to the County's goal of effectively and safely controlling access. It is our opinion that the construction of two 12-ft. travel lanes and a flush 14-ft. wide center turn lane is not consistent with the access and safety goals of the County.

Alternate No. 5

Recommendation: Use mechanically stabilized embankment (MSE) wall abutments and eliminate the end spans.

- Response: We concur with the recommendation.
- Justification: We are in agreement with the recommendation to evaluate the use of mechanically stabilized embankment (MSE) walls as a means to reduce the overall bridge span lengths and substructure configurations. The extent of the cost savings cannot be fully quantified at this time until a more detailed design development of the bridge has been advanced. The under railroad which will be crossed by the proposed Newnan Bypass is currently a single track on the Norfolk Southern railroad. It is our understanding through our research and through dialogue with Coweta County that the track has limited use. At this time we are unaware of any plans or proposals by Norfolk Southern for this section of the railroad line to be double tracked or realigned. The proposed bridge crossing is located over a curved section of the railroad track which will require that we conduct a horizontal sight distance evaluation. The goal of our sight distance evaluation will be to determine the optimum location and skew at which the MSE walls can be set to maximize railroad sight distance and minimize the structure length. In addition to the sight distance evaluation, CHA will also ensure that all of the railroad's minimum horizontal and vertical clearances are satisfied with the proposed MSE solution. As the design development phase advances CHA will initiate and maintain coordination and correspondence with the GDOT Railroad coordinator and/or Norfolk Southern to determine any planned or proposed improvements or alterations to the tracks, and to solicit Norfolk Southern's input and approval of the design concept.

Alternate No. 7

Recommendation: Lower the profile from sta. 134+00 to 189+00 to reduce the amount of embankment.

- Response: We concur with this recommendation.
- Justification: We agree that there are additional opportunities to adjust the proposed profile through the recommended station range. Refining the proposed profile will be in part controlled by the minimum clearance requirements of the railroad overpass, and the yet to be determined hydraulic requirements of the stream crossings. A proposed profile will be designed in conjunction with the required box culvert that will minimize the embankment quantities without violating AASHTO's minimum geometric requirements for grades and vertical curves required of 45 mph speed design. Furthermore, as part of our detailed design development assessment we will evaluate opportunities to reduce the embankment requirements throughout the length of the project including, but not limited to, using roadside overhead lighting to meet sight distance requirements to further reduce sag vertical curve "k" values.

Alternate No. 11

Recommendation: Use concrete box culverts at the stream crossings in lieu of bridges.

- Response: We concur with this recommendation.
- Justification: We are in agreement with the recommendation to evaluate the use of box culverts as a cost-effective alternative to bridge crossings of the streams. The decision to use box culverts or bridge structures is dependent on several variables which have not been fully evaluated at this point in the design development process: the presence of threatened or endangered aquatic species, stream and wetland impacts, potential impacts by culvert or bridge backwaters to upstream property owners, FEMA map revisions, and lastly the outcome of a detailed hydrologic and hydraulic (H/H) study. An aquatic field survey has been undertaken to determine the presence of any threatened or endangered aquatic species within the streams impacted by the project. The field survey has concluded that there are no threatened or endangered species the streams to be crossed. Construction of box culverts in lieu of bridge structures will have a greater

potential for wetland and stream impacts. From preliminary environmental evaluations, the potential mitigation costs associated with constructing box culverts are not expected to exceed \$100,000 for both stream crossings. The combined culvert construction and mitigation cost is substantially less than the bridge cost. From a cost standpoint, it is our opinion that the use of box culverts is a viable alternative to a bridge that will be more fully investigated as the design is more fully developed.

Another component of the decision that must be evaluated in the determination to use box culverts at the stream crossings is the potential impact to upstream property by backwaters created by the culvert flow constrictions. Since this project is on a new alignment, any proposed culvert or bridge structure that does not clear span the entire floodplain will create a rise (backwater) in the upstream water surfaces. The only solution to avoid an upstream backwater is to bridge the entire floodplain. A review of FEMA Flood Insurance Rate Maps (FIRM) indicates the presence of a regulatory floodway at both of the proposed stream crossings. Encroachment on the regulatory floodways by construction of box culverts would be unavoidable. In order to construct box culverts on a regulatory floodway, FEMA requires approval from the affected property owners and the Community (unincorporated Coweta County) in the form of a "Conditional Letter of Map Revision" or CLOMR which is submitted to FEMA. It is our opinion that the potential cost savings by the use of box culverts warrants the engineering effort involved with obtaining a CLOMR. It was suggested during meetings between District 3, Coweta County, and CHA that it might be possible to mitigate backwater impacts to upstream properties through the use of drainage easements. Drainage easements will be investigated by CHA as a cost effective means to minimize structure costs while satisfying the FEMA regulations.

The use and size of box culverts at the stream crossings is dependant on satisfying GDOT Bridge/Culvert Hydraulic Design Criteria. CHA will perform a hydrologic and hydraulic study of the proposed stream crossings in accordance with the GDOT Manual on Drainage Design with the purpose of determining the required culvert or bridge opening while minimizing flood and scour hazards, preserving the ecological systems of any wetlands, and conveying flood flows across the right of way with minimal impacts. The hydrologic and hydraulic study will evaluate both bridge and culvert alternates as appropriate for the size of the drainage basin and site conditions. The GDOT backwater, freeboard, and velocity requirements will be satisfied as appropriate for the type of drainage structure. The estimated flows, which were calculated from preliminary drainage basin delineations, are within the capacity of GDOT standard box culverts. The use of box culverts at the stream crossings will be fully investigated by CHA. Significant consideration will be given to cost and potential environmental impacts in the structure selection.

Alternate No. 16

Recommendation: Reduce the right-of-way to the minimum practical width. Allow five ft. on each side outside of the toe of slopes for erosion control.

- Response: We concur with this recommendation.
- Justification: Right of way will be purchased and maintained by Coweta County to allow for construction and maintenance of the roadway, drainage structures and utilities. It is the County's goal to minimize the amount of required right-of-way wherever possible. This goal can be achieved by setting a practical offset to the construction limits. For this project the established offset will be 5 feet beyond cut slope limits and 10 feet beyond fill slope limits. For locations that require additional access for construction and erosion control measures the County will utilize temporary easements. In areas where permanent features are constructed, such as culverts, storm drain pipes and rip-rap, the right of way will be established at a minimum to allow access for maintenance purposes.

Alternate No. 19

Recommendation: Use 24-in concrete curb and gutter along the raised median in lieu of the proposed 30-in. concrete curb and gutter.

- Response: We concur with this recommendation.
- Justification: To minimize costs, it is Coweta County's preference to use a 24" concrete curb and gutter at all locations where proposed. As part of our design development process we will evaluate the effects of a reduced gutter width on gutter-spread and determine if an increase in the number of drainage structures supersedes the potential cost savings of using a 24" curb and gutter. If through implementation of the VE Study's recommendations it is established that a raised median is the preferred section, CHA will utilize the most cost effective curb and gutter.

Alternate No. 20

Recommendation: Use a 20-ft. flush grassed median with a 2-ft. inside paved shoulder.

- Response: We do not concur with this recommendation.
- Justification: It has been indicated by GDOT District 3 personnel that this particular practice has created drainage maintenance problems in the past. The District maintenance experience has shown that over time erosion can create small depressed areas that are often difficult to identify during routine maintenance inspections. The results are that these areas can quickly fill with water during hard rain events creating standing water that will extend into the travel way increasing the potential for ponding on the travel way. In some cases, it has been the experience of the District that retrofitting of median drains is required at substantial cost and interruptions to the traveling public.

Alternate No. 25

Recommendation: Use a 6 ½-ft flush median section comprised of 2-ft. inside paved shoulders and a 2 ½-ft. concrete barrier.

- Response: We do not concur with this recommendation.
- Justification: Coweta County anticipates significant development of properties along the Newnan Bypass, and left turn access will be imperative to the development of these properties. The recommended alternate 6 ½ ft. flush median with a 2 ½ ft raised concrete barrier does not allow for left turn movements. Furthermore if left turn movements are allowed by increasing the median widths and providing openings along the concrete barrier, the continuity and cost-effectiveness of the recommendation will be limited. Because of the discontinuities in the median barrier section which would be required to facilitate left turn movements, we are of the opinion that this is a recommended alternate is not prudent.

Alternate No. 26

Recommendation: Eliminate the median.

- Response: We do not concur with this recommendation
- Justification: Similar justification to Alternate No. 25. The construction of the Bypass will promote the future development of the abutting properties within the Bypass corridor. It is anticipated that access to these abutting properties and subsequent developments will need to be provided through dedicated left turn lanes that will remove the turning vehicles (exiting) from the through lane and allow safe refuge out of the traffic stream. A similar analogy is made for access to the Bypass from the abutting properties, whereby the vehicles will be afforded refuge to merge into the through traffic stream. It is our opinion that in order to maintain acceptable operations and levels of service and safety for access between the Bypass and the abutting properties, the elimination of the median is not feasible.

Alternate No. 30

Recommendation: Construct two 12-ft. wide travel lanes with a 20-ft. median and curb and gutter throughout the project. Purchase the originally intended right-of-way width to allow for future expansion when warranted.

- Response: We do not concur with the recommendation of constructing two 12 foot wide travel lanes. We do concur with the construction of a raised 20 foot wide median.
- Justification: Same justification as presented for Alternate No.1. Also as stated in response to the Alternate 4 recommendation, it is preferable to use a raised median on low to moderate speed roadways. Advantages include: Controlled management of left turn access points (the 20 foot median width is sufficient to allow left turn movements, and the raised curb prevents turns in unsafe locations); Raised medians increase safety for pedestrians (a 1998 GDOT study of crash statistics showed that a raised median had 78 percent fewer pedestrian fatalities per 100 miles of road than roadways with dual left turn lanes); and an overall enhancement to traffic efficiency in high volume multilane roads.
- *It should be noted that a minimal length 44 foot wide depressed median is required at the end of the project to correspond with the existing Newnan Bypass typical section.*

Alternate No. 31

Recommendation: Commence the left-turn lane from the proposed Newnan Bypass onto Turkey Creek Rd after the railroad bridge. The proposed geometry is like the left-turn lane from the Newnan Bypass onto East Gordon Rd on the south end of the project

- Response: We concur with this recommendation
- Justification: The preparation of a sub-area traffic study will more accurately define turning volumes and storage/auxiliary lane requirements at the Turkey Creek Rd / Newnan Bypass intersection. As part of the design development phase, CHA will evaluate all of the traffic data and establish a practical solution to remove the left turn lane from the proposed overpass over the Norfolk Southern Railroad.

Alternate No. 33

Recommendation: Use 2:1 fill slopes for all fill areas and install guardrails where fill height exceeds ten-ft.

- Response: We do not concur with this recommendation.
- Justification: The recommendation suggests the use of 2:1 side slopes for all embankment conditions as a means to reduce the borrow quantities and right of way required for the project. The recommendation further suggests that the use of guardrail along these 2:1 slopes be limited to areas where the 2:1 embankment slope is in excess of 10 feet. We cannot concur with this recommendation from the standpoint that 2:1 side slopes within the clear zone of the roadway are a longitudinal roadside hazard. In order to protect the traveling public, roadside hazards are to be evaluated on the degree of severity and addressed accordingly. If 2:1 embankment slopes are to be used throughout the project, then all side slopes will require shielding with guardrail. Recognizing that guardrail, inherent to its nature, is also a roadside obstruction, we do not feel that it is feasible or prudent to advance the project with 2:1 side slopes with guardrail protection throughout the entire length of the project. As a safe and practical design we will make every effort to minimize the amount of guardrail through the judicious use of flattened fore slopes and back slopes and smooth transitions between cut and fill sections. The use of smooth transitions is also in the spirit and intent of context sensitivity to blend with the surrounding topography. In accordance with the GDOT Roadside Design Policies fill heights exceeding 10 feet will utilize 2:1 side slopes, will be shielded and the end treatments will be crashworthy.

Alternate No. 34

Recommendation: Use 1:1 fill slope with permanent erosion control mats and guardrails two ft. from the edge of the shoulders. (Sta. 147+00 to 189+00) This will save nine ft. of right-of-way.

- **Response:** We do not concur with this recommendation
Justification: The recommendation suggests the use of 1:1 side slopes for embankment conditions between stations 147+00 and 189+00. The embankment heights between these stations range from 4 to 38 feet. The recommendation is presented as a means to reduce the amount of right of way and borrow quantities required for the project. In order to ensure the stability of 1:1 embankment slopes with borrow materials, it is our opinion that manufactured soil stabilization methods (i.e. geo-grids) would need to be employed to ensure long term stability. It is our opinion that the cost-benefit ratio of a reduction in right of way and embankment volume versus the cost for manufactured soil stabilization methods is not feasible, nor prudent. It is further a consideration that over steepened slopes would be highly susceptible to erosion and sloughing from roadside run-off. In order to remedy that concern it is our opinion that a roadside drainage collection/ conveyance system of curb and gutter with drainage inlets and slope drain pipes would need to be constructed throughout the embankment section. In our response we must also consider the long term roadside maintenance, and a concern that 1:1 slopes are not traversable with common roadside maintenance equipment (tractor mowers, etc). This is a cost that cannot be quantified, but is a cost that must be considered in the context of the overall project cost evaluation.

Alternate No. 35

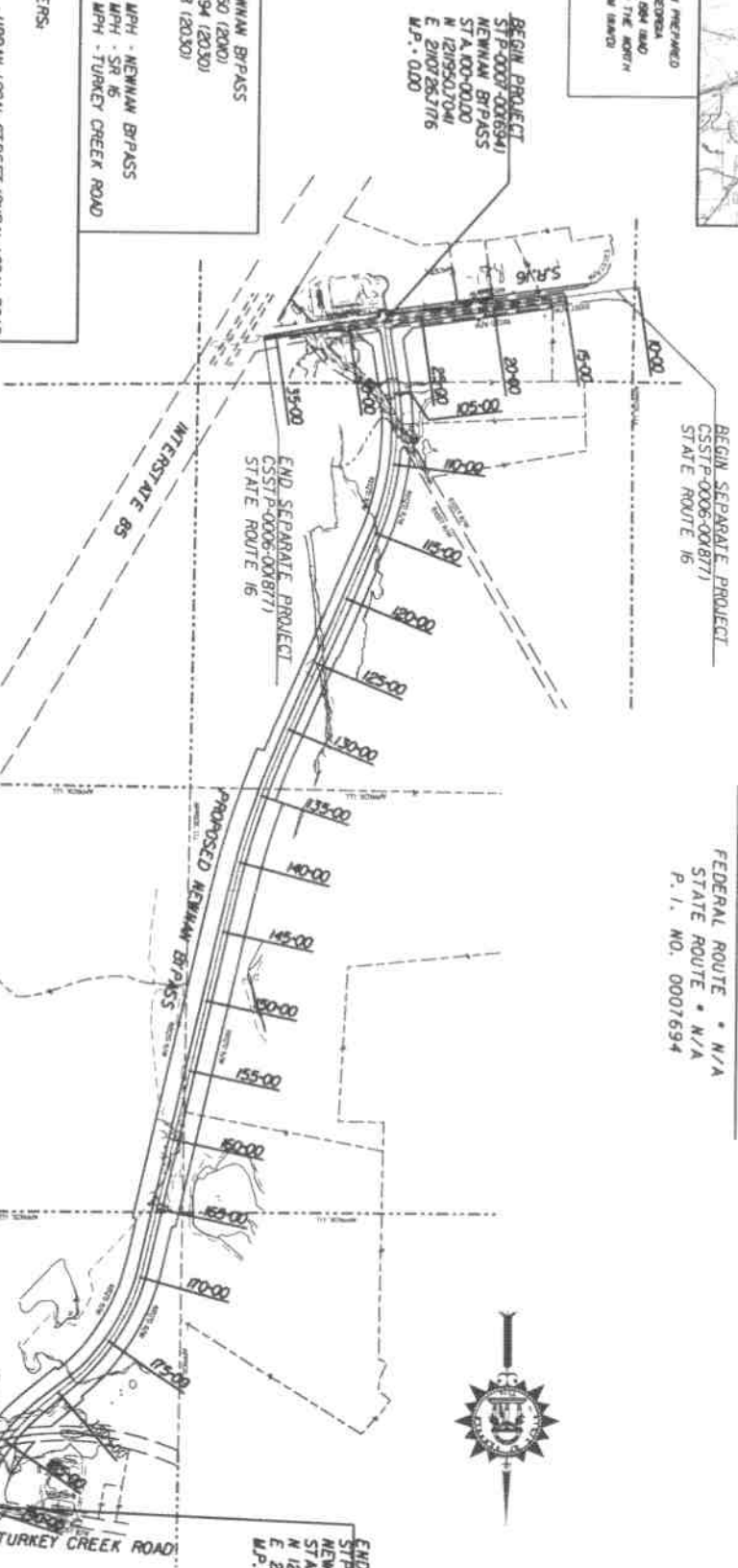
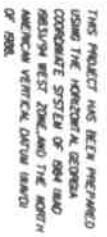
Recommendation: Use 4-ft. wide paved sections of the shoulders on both sides of the facility, thereby reducing the overall shoulder width by 2 ½ ft on each side. No deductions are taken for the bridges with total lengths of 950 lf.

- **Response:** We concur with the use of a 4 foot paved shoulder section. We do not concur with the overall reduction in shoulder width from 10 feet to 7 ½ feet.
- **Justification:** The recommended alternate suggestion to use a 4-ft. paved shoulder instead of the proposed 6 ½-ft. shoulder will save on materials cost, and is an option that will be utilized. The recommendation also states that the overall shoulder width be reduced by 2 ½ -ft. With an understanding of the vehicle composition and volumes which will be directed to the Bypass, and the likely potential of a high truck traffic percentage it is our opinion that the 10-ft. shoulder is the more desirable width. It is our opinion that the 7 ½ -ft. shoulder does not provide ample width for a vehicle to pull entirely from the travel lane and out of the traffic stream.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

PLAN AND PROFILE OF PROPOSED
NEWMAN BYPASS
FROM TURKEY CREEK ROAD TO SR16

FEDERAL AID PROJECT
STP-0007-00(694)
COWETA COUNTY



END PROJECT
STP-0007-00694)
NEWMAN BYPASS
STA. 190+00.00
N 1220.307 27.90
E 2113.446 7.307
W.P. = 150

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DESIGN DATA	NEWMAN BYPASS
TRAFFIC ADT ₁	3950 (2000)
TRAFFIC ADT ₂	80394 (20300)
TRAFFIC DHT ₂	958 (20300)
DIRECTIONAL DIST ₁	
84 HR. TRUCKS %	
SPEED DESIGN:	45 MPH - NEWMAN BYPASS 45 MPH - SR 16 45 MPH - TURKEY CREEK ROAD
LAND LOT NUMBERS:	
LAND DISTRICT NUMBERS:	
FUNCTIONAL CLASS:	
TURKEY CREEK ROAD - URBAN LOCAL STREET/RURAL LOCAL ROAD	
NEWMAN BYPASS - URBAN PRINCIPAL ARTERIAL	
SR 16 - URBAN MINOR ARTERIAL	
THIS PROJECT IS ROAD IN	
CONETTA COUNTY AND IS	
ROAD IN COMDIST. NO. 1.	
PROJECT DESIGNATION: EXEMPT	
DESIGNED IN ENGLISH UNITS.	

ST P-0007-006941 P.L.M.0007694 CONETA COUNTY MO.077	
LENGTH OF PROJECT	MILES
NET LENGTH OF ROADWAY	1500
NET LENGTH OF BRIDGES	0.000
NET LENGTH OF PROJECT	1500
NET LENGTH OF EXCEPTIONS	0.000
GROSS LENGTH OF PROJECT	1500



PREPARED BY:		DATE
THOMAS P. JAMES, P.E.		
RECOMMENDED FOR APPROVAL		DATE
THOMAS HONELL, P.E. DISTRICT ENGINEER		
APPROVED		DATE
GERALD ROSS, P.E. CHIEF ENGINEER		
LOCATION AND DESIGN APPROVAL		
		DATE